

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62300P, TD62300F

2CH LOW  $V_{CC}$  SINK DRIVER

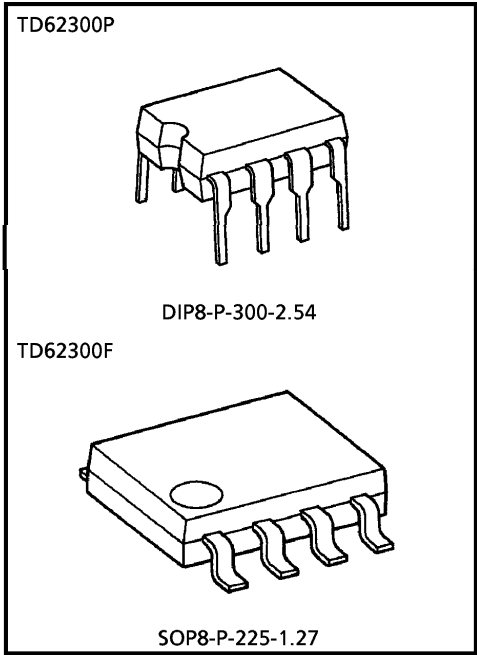
The TD62300P, TD62300F are comprised of two Low  $V_{CC}$  drivers.

These devices can operate from  $V_{CC} = 1.0V$ , and suitable for various types of battery system.

Applications include relay, hammer, lamp and stepping motor drivers.

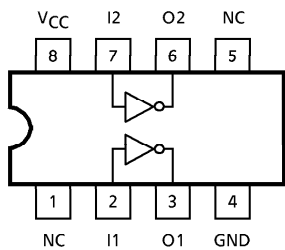
FEATURES

- Wide supply voltage range :  $V_{CC} = 1.0 \sim 6.5V$
- High output current (single output) : 200mA (Max.)
- Low supply current :  $I_{CC} (OFF) = 1\mu A$  (Max.)
- Input resistor :  $R_{IN} = 33k\Omega$  (Typ.)
- Package type-P : DIP-8 pin
- Package type-F : SOP-8 pin



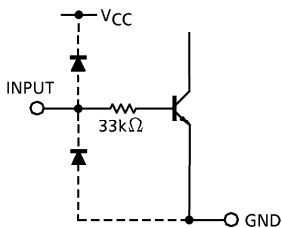
Weight  
DIP8-P-300-2.54 : 0.52g (Typ.)  
SOP8-P-225-1.27 : 0.08g (Typ.)

PIN CONNECTION (TOP VIEW)

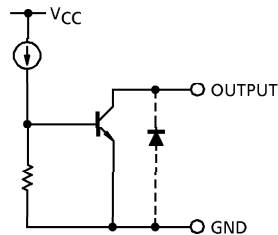


OUTPUT-INPUT EQUIVALENT CIRCUIT

Equivalent of input



Equivalent of output



(Note) The input and output parasitic diodes cannot be used as clamp diodes.

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**MAXIMUM RATINGS** (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	7.0	V
Output Sustaining Voltage	V <sub>CE</sub> (SUS)	8.0	V
Output Current	I <sub>OUT</sub>	200	mA / ch
Input Voltage	V <sub>IN</sub>	V <sub>CC</sub>	V
Power Dissipation	TD62300P	P <sub>D</sub>	900
	TD62300F		480 (Note)
Operating Temperature	T <sub>opr</sub>	0 ~ 70	°C
Storage Temperature	T <sub>stg</sub>	- 55 ~ 150	°C

(Note) On Glass Epoxy (20×20×1.6mm Cu 50%)

**RECOMMENDED OPERATING CONDITIONS** (Ta = 0~70°C)

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V <sub>CC</sub>		1.0	—	6.5	V
Output Sustaining Voltage	V <sub>CE</sub> (SUS)		—	—	8	V
Output Current	I <sub>OUT</sub>		—	—	150	mA
Input Voltage	V <sub>IN</sub>		0	—	V <sub>CC</sub>	V
Power Dissipation	TD62300P	P <sub>D</sub>	—	—	430	mW
	TD62300F	(Note)	—	—	230	

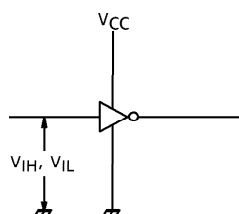
(Note) On Glass Epoxy (20×20×1.6mm Cu 50%)

**ELECTRICAL CHARACTERISTICS** (Ta = 25°C)

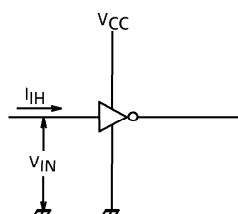
CHARACTERISTIC	SYMBOL	TEST CIR- CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Voltage	"H" Level	V <sub>IH</sub>	1	0.85	—	—	V
	"L" Level	V <sub>IL</sub>	1	—	—	0.45	
Input Current	"H" Level	I <sub>IH</sub>	2	V <sub>IN</sub> = 0.85V	—	4.9	μA
Output Current	"H" Level	I <sub>OH</sub>	3	V <sub>CC</sub> = V <sub>OUT</sub> = 5.0V	—	10	μA
Output Voltage	"L" Level	V <sub>OL</sub>	4	V <sub>CC</sub> = 1.4V, I <sub>OUT</sub> = 140mA	—	0.2	0.6
Supply Current	I <sub>CC</sub> (ON)	5	V <sub>CC</sub> = 1.4V, V <sub>IN</sub> = 0.85V	—	6.4	9.0	mA
	I <sub>CC</sub> (OFF)		V <sub>CC</sub> = 5.0V, V <sub>IN</sub> = 0V	—	—	1.0	
Turn-On Delay	t <sub>ON</sub>	6	V <sub>CC</sub> = 1.7V, R <sub>L</sub> = 10Ω	—	0.1	—	μs
Turn-Off Delay	t <sub>OFF</sub>		C <sub>L</sub> = 15pF	—	2.3	—	μs

## TEST CIRCUIT

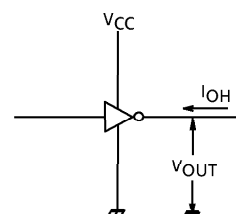
1.  $V_{IH}$ ,  $V_{IL}$



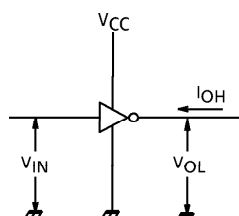
2.  $I_{IH}$



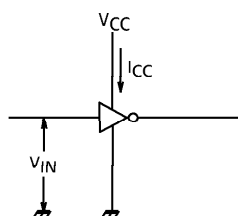
3.  $I_{OH}$



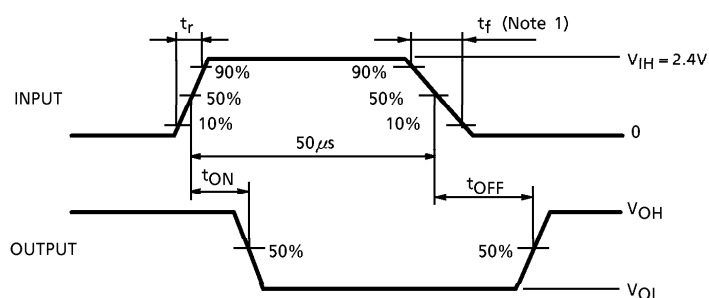
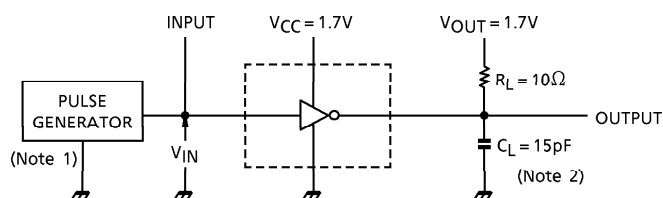
4.  $V_{OL}$



5.  $I_{CC(ON)}$ ,  $I_{CC(OFF)}$



6.  $t_{ON}$ ,  $t_{OFF}$

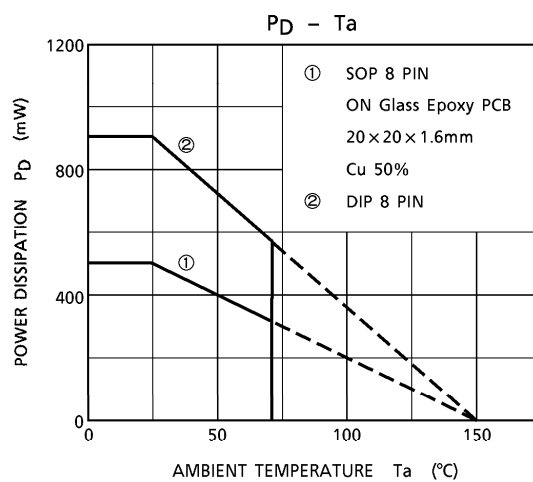
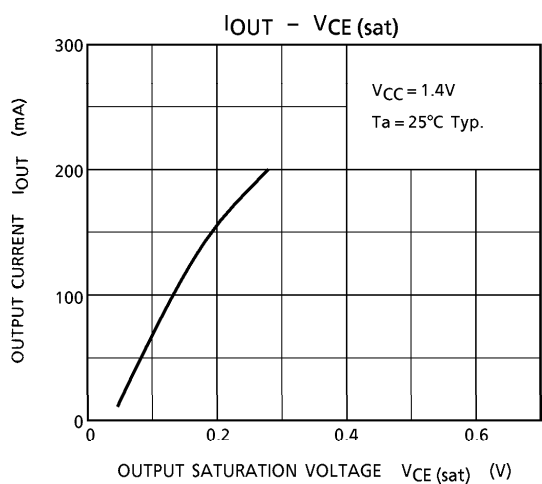
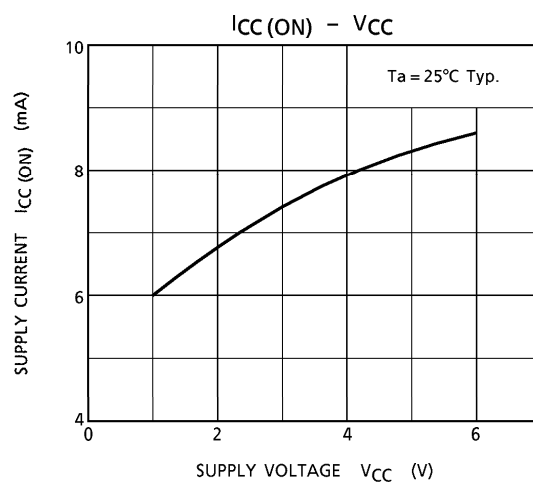
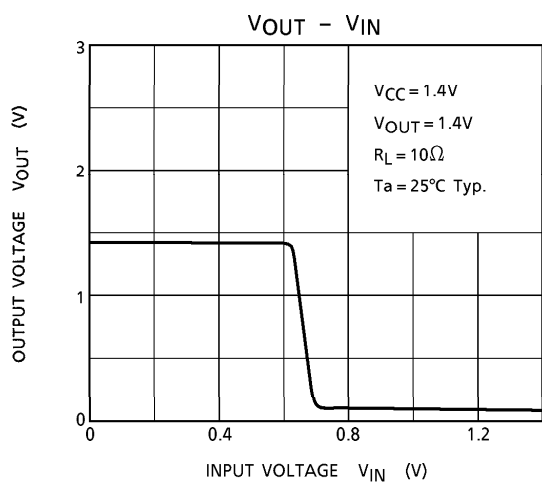


(Note 1) Pulse Width  $50\mu s$   
Duty Cycle 10%  
Output Impedance  $50\Omega$   
 $t_r \leq 5ns$ ,  $t_f \leq 10ns$

(Note 2)  $C_L$  includes probe and jig capacitance.

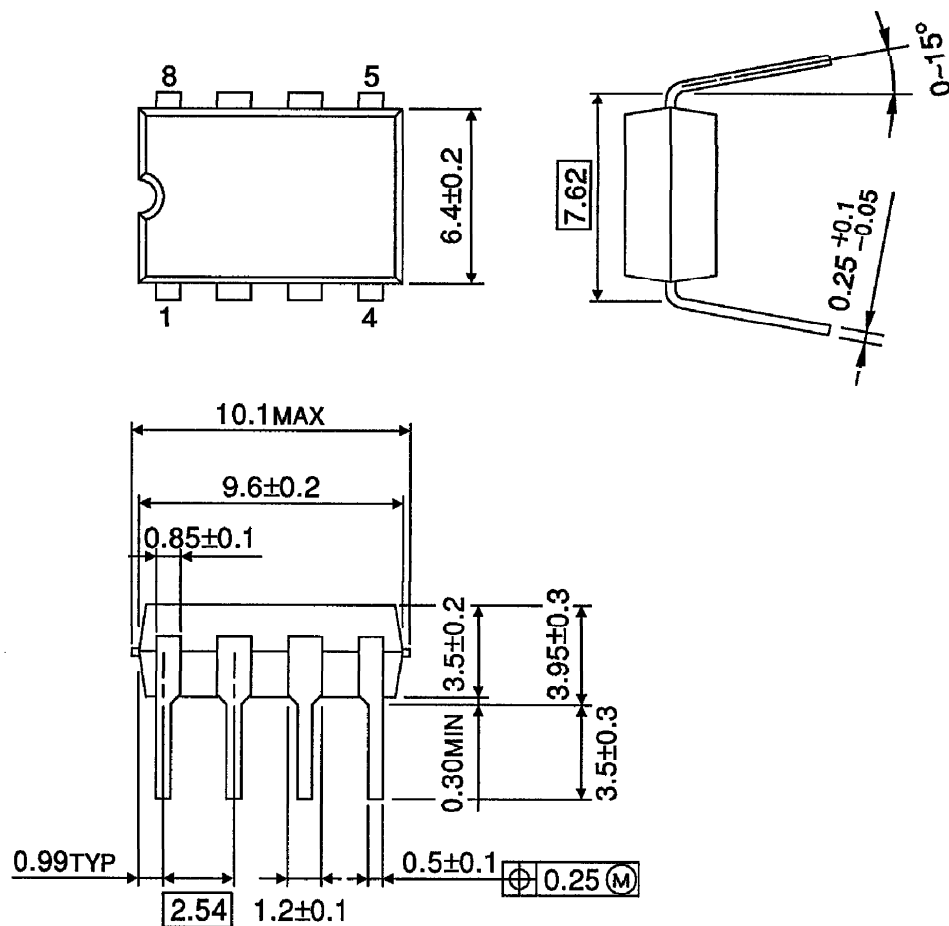
## PRECAUTIONS for USING

Utmost care is necessary in the design of the output line,  $V_{CC}$  and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.



OUTLINE DRAWING  
DIP8-P-300-2.54

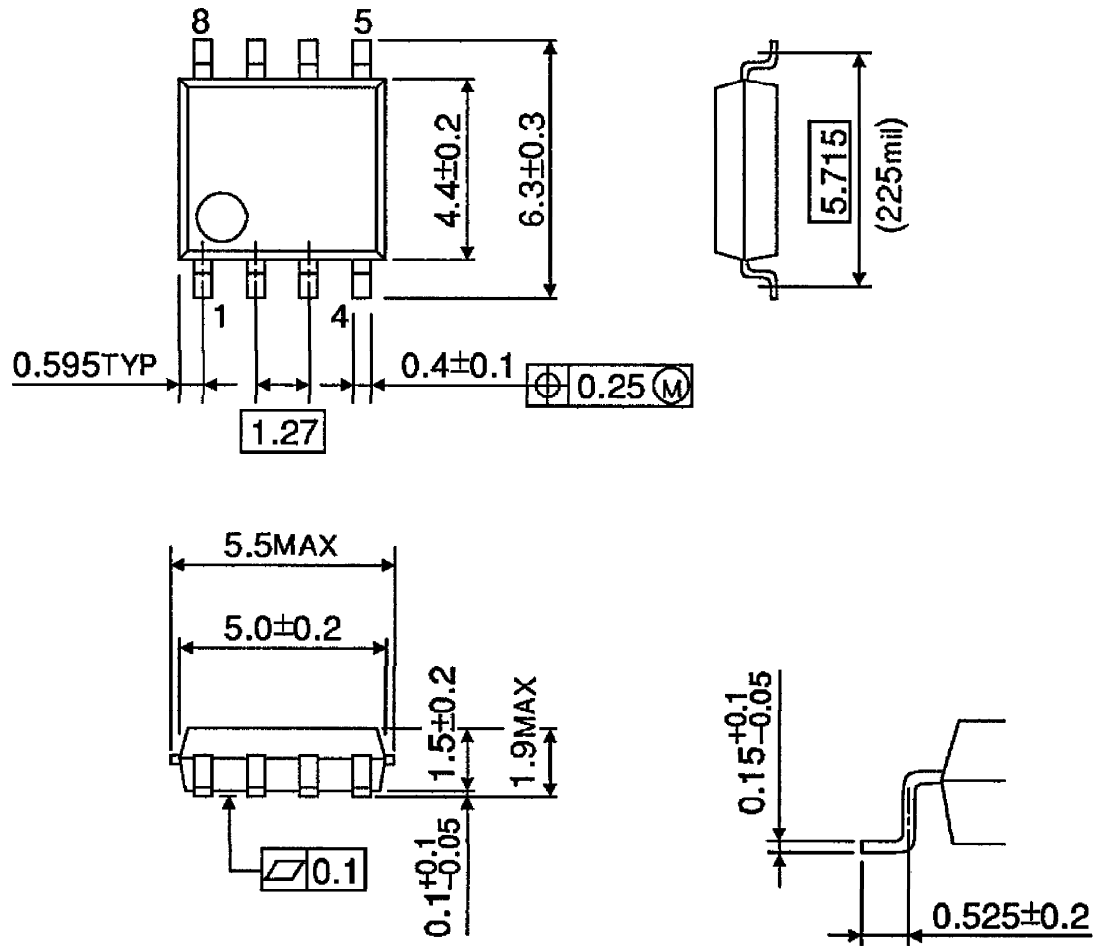
Unit : mm



Weight : 0.52g (Typ.)

OUTLINE DRAWING  
SOP8-P-225-1.27

Unit : mm



Weight : 0.08g (Typ.)